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Typification of the Andean taxa of *Umbilicaria* described by William Nylander

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Abstract - The typifications of the Andean taxa *Umbilicaria dichroa, Umbilicaria haplocarpa,* and *Umbilicaria calvescens,* originally described by William Nylander, are discussed and lectotypes designated.

Key words – nomenclature, neotropic lichens

Introduction

William Nylander (1822–99) was born in Finland and never traveled beyond Europe. A medical doctor with a penchant for natural history, he turned to lichenology inspired by the works of Elias Fries and the brothers Tulasne. He first came to Paris to study in 1852, and after a few years as professor of botany in Helsinki (1857–63), decided to return to Paris to work on lichens at the Muséum national d'Histoire naturelle (Norrlin 1913, Ahti 1967). As a reputed expert of lichens he was trusted with the identification and description of a wealth of collections made in exotic places. In a series of works Nylander described lichens from the high Andes of South America collected in the 1840s and 1850s (Nylander 1855, 1859, 1861, 1869). Among the Andean genera he studied was a genus familiar to him from his native Finland, the genus *Umbilicaria*. This genus has a worldwide distribution and constitutes a major element in the saxicolous lichen flora of the boreal, alpine, and arctic regions. Together with *Lasallia* the genus *Umbilicaria* constitute the family *Umbilicariaceae* and the sub-order *Umbilicarinae*, part of the order *Umbilicariales* (Miadlikowska et al. 2006, Spatafora et al. 2006, Hibbett et al. 2007).

The collections studied by Nylander indicated the presence in the central high Andes of an endemic group of *Umbilicaria* species with its biogeographic center in Bolivia and Peru, and he named and described several new species and varieties (Nylander 1855, 1859, 1861, 1869). More recent investigations suggest that this endemic element extends southwards into the northern

parts of Argentina and Chile and northwards into southern Ecuador (Frey 1936b, 1949; Llano 1950, Hestmark 1997). This endemic element completely dominates the *Umbilicaria* 'flora' in the lowermost parts (ca. 2800–4400m) of the altitudinal range of the genus in Bolivia, Peru, and the northern parts of Chile and Argentina.

The type concept was not instituted for botanical nomenclature when Nylander described his Andean *Umbilicaria* species, and his protologues and references to specimens are sometimes ambiguous, sometimes changing from one paper to another. He did not in any case mark or designate particular individual thalli or collections as 'type' or 'original' or something similar. This has led to much confusion, a situation that did not substantially change with Llano's monograph of the family *Umbilicariaceae* in the Western Hemisphere (Llano 1950). Llano did not visit or examine specimens from Nylander's own herbarium (H-NYL, now in H) but relied on photographs of select specimens from H-NYL. He did not at all study specimens in the cryptogamic division of the Muséum national d'Histoire naturelle (PC), despite the fact that Nylander mainly worked with the lichen collections of PC.

The aim of the present paper is to clarify the typification of Nylander's endemic Andean taxa, and designate lectotypes for the species. The study is based on all relevant material in H-NYL and PC. All specimens cited have been examined by the author.

Nomenclature

Umbilicaria dichroa

The first taxon described by Nylander in the endemic Andean element was *Umbilicaria dichroa* from Peru (Nylander 1855: 674). The protologue is brief:

> "1757. *Umbilicaria dichroa* Nyl. - Affinis *U. hirsutae* var. murinae, sed apothecia diversa. Thallus supra cinereus opacus infra ater scaber, apothecia non plicata; sporae 4-8-nae ellipsoideae simplices, longit. 0,016-20 mm., crassit. 0,009-10 mm. - In Peruvia."

The new taxon was described from collections made by German pharmacist, botanist, and explorer Willibald Lechler (1814–56), who went to South America in 1850–55, and from April to September 1854 collected around Lake Titicaca. Lechler became Dr. sci. nat. at Tübingen in 1856; the same year he died at sea outside Ecuador on his return to Peru where he was going to take a position as physician at Arequipa (Anonymous 1858, Lehmann 1951). The plants Lechler collected in Peru were distributed and sold by the physician, missionary, and botanist Rudolf Friedrich Hohenacker (1798–1874) as Plantae peruvianae (on Hohenacker, see Baur 1969). The number 1757 in the protologue of *U. dichroa* refers to Lechler's collection number. Apparently no text was issued with the Plantae peruvianae, and thus it is not considered a published exsiccate (Sayre 1974: 356–357).

In Nylander's herbarium in H there is a specimen of this collection: H-NYL 31526, labeled "W. Lechler pl. peruvian. Ed. R. F. Hohenacker. 1757. *Umbilicaria dichroa* Nyl. Azangaro. Hoch Peru. Jun. m. 1854" and containing a single thallus, 6 cm in diameter, with a few small, scattered, leiodisc apothecia. The label further has a red-ink double-cross to indicate Nylander's chemical tests. The collection was thus made in mid-June in 1854 at Azangaro in Peru. Azángaro is both a town and a province in the Departamento Puno in Peru, on the northwestern shore of Lake Titicaca and its surrounding country to the west and north. Llano (1950: 62, 242, and Plate 11, Fig. 2) indicates H-NYL 31526 as 'Type', based on a photograph of the specimen he received from H. Presumably because he did not actually have the specimen at hand, the envelope or label of H-NYL 31526 are not marked by Llano in any way to indicate type status. Nor did Nylander mark it to indicate that it is a new species. Llano (1950: 242, and Plate 11, Fig. 1) further designated a FH collection of Plantae peruvianae 1757 as 'cotype', basing his *U. dichroa* description on his examination (cf. Llano 1950: 63).

Several problems relate to the Llano typifications. Frey (1931: 101) stated that he had studied a *U. dichroa* specimen from the Herb. Boissier (Bot. Institute of Geneva) and that "Die Genfer Pflanze ist das Original: Lechler, Plantae peruviensis [sic] no. 1757." ("The Geneva plant is the original: Lechler, Plantae peruviensis no. 1757."). This might be considered a typification except that (as noted in Hestmark 2007) Frey's meaning for 'Original' is ambiguous and not synonymous with 'type specimen.' His remark here is best interpreted as indicating 'original material' or 'original collection.' In any case, G holds two separate envelopes labeled as "*U. dichroa*, Lechler, Plant. peruvianae no. 1757" (now labeled G00053128 and G00053129) with BOTH envelopes bearing a red label marked TYPUS. Packet G00053128, which derives from herb. Duby 1886 and Müller Argoviensis 1896, contains one large (9 cm diam.) thallus lacking apothecia and three fragments glued onto the cardboard, one with abundant, well-developed leiodisc apothecia and another very parasitized. Packet G00053129 contains a single large thallus with no apothecia. It is not known who attached the TYPUS labels. In UPS there is an envelope (Lechler, Plant. peruvianae no. 1757) containing several *U. dichroa* fragments originally from the Thore Fries herbarium bearing a red label glued to the sheet marked COTYPUS. These examples show the confusion created by Nylander's reference to a collection number rather than a particular specimen (individual thallus) or herbarium and clearly indicate the need for a more definite designation of the *U. dichroa* type.

Nylander in the protologue did not indicate a particular specimen of Plant. peruv. 1757, nor a particular herbarium. In PC there are two separate sheets with specimens of Plant. peruv. 1757. One sheet with a big, curled-up thallus plus a

small thallus fragment with abundant leiodisc apothecia. The other sheet has several larger thallus fragments without apothecia, and a small fragment with leiodisc apothecia. The handwritten labels on BOTH these sheets, in Nylander's hand, states that they are "Nyl. n.sp. ipse"; thus they were both available to Nylander when he described the new taxon *U. dichroa*, and on the labels he actually indicated that it was a new species. It would then seem reasonable to choose one of these specimens in PC as lectotype. However, both these collections in PC seem to be *mixtures* of two species: the small apothecium bearing thallus fragments glued on to these sheets (and several other samples of Plant. peruv. 1757 in other herbaria), are evidently broken from one or a few larger thalli rich in apothecia. Some of these apothecium rich fragments have a light lower side with pale rhizinomorphs, and not the granular, reticulate black lower side of the big thalli in the Plant. peruv. 1757 collections. These small fragments are referable to the taxon *U. haplocarpa*, rather than *U. dichroa*. These two rather similar looking taxa sometimes grow in mixtures in the Lake Titicaca area (own observations), and as apothecia on *U. dichroa* are rare, it will have been tempting to distribute fragments of an apothecium-rich thallus to as many specimens of Plant. peruv. 1757 as possible.

In contrast to these often mixed collections, the single thallus of *U. dichroa* constituting H-NYL 31526 (in H) both has the characteristic black, granular lower side and a few large and several small distinctly leiodisc apothecia. It is further the single specimen of *U. dichroa* and Plant. peruv. 1757 that Nylander selected for his own private herbarium. This is the specimen stated to be the 'type' by Llano (Llano 1950: 62, 242, and Plate 11, Fig. 2). In view of the problems relating to the many other separate exemplars of Plant. peruv. 1757, I here suggest that Llano's choice of specimen should be retained, and formally designated as lectotype, while the mixture of species in some other exemplars of Plant. peruv. 1757, suggests that labels such as 'cotype' or 'isotype' should be avoided. Thus: **Lectotype (designated here)** of *Umbilicaria dichroa* Nyl. the entire collection: Herbarium Nylander (H-NYL) 31526 (in Herbarium Universitas Helsinkiensis, H). The envelope is now marked: "Lectotype of *Umbilicaria dichroa* Nyl. G. Hestmark 2008."

Umbilicaria haplocarpa

Llano (1950: 63) noted that: "Nylander's type description for *U. dichroa* and the closely related *U. haplocarpa* are very similar; without adequate cotype material for direct comparison it would have been difficult to separate undetermined specimens." In 1858 Nylander cites the nomen nudum "U. haplocarpa Nyl. – Peruv." (Nylander 1858: 108), and a year later describes this new species with leiodisc apothecia from the central Andes (Nylander 1859: 217):

> "5. *U. haplocarpa* Nyl. - Thallus cinereus majusculus sat firmus opacus, subtus concolor vel paullo obscurior rhizinis concoloribus copiosis hirtus; apothecia superficialia simplicia plana aut convexa intus extusque nigra; sporæ sæpius 6^{næ} dilute fuscæ ellipsoideæ vel oblongæ, uni-septatæ (vel adhuc septis binis longitudinalibus divisæ), long. 0,016-20, crass. 0,009-0,013 millim., paraphyses discretæ. Gelatina hymenea iodo cærulescens, dein violacee obscurata. - In Peruvia lecta a cel. Cl. Gay. - Convenit hæc species externa facie omnino cum *U. hirsuta*, at apothecia abunde differunt."

The only collection cited in this protologue is one made in Peru by French botanist and historian Claude Gay Mouret (Claudio Gay; 1800–73), famous for his multi-volume Historia física y politica de Chile, where several volumes treat botany. Gay traveled in South America in 1828–32, and 1834–42, and made a trip to Peru in 1839–40. On this trip he crossed the Cordillera from Lima via the Tingo Pass to Cuzco, visiting Tarma, Huancavelica, Ayacucho, Andahuaylas, Abancay and Arequipa (Gay Mouret 1843, Stuardo Ortiz 1973: 305-307). Accordingly a collection by Gay must be the type, if it can be traced. Nylander does not indicate in which herbarium the Gay collection of *U. haplocarpa* is to be found. Llano in his treatment of *U. haplocarpa* explicitly stated that "Type or cotype material leg. *Gay* was not seen." (Llano 1950: 65). He nevertheless wrote: "Type: In the Nylander Herb, Botanical Museum, University of Helsingfors, from Peruviae montibus, leg cl. Gay (Pl. 10, fig. 1-3)" (Llano 1950: 64). But in fact there is no Gay collection of *U. haplocarpa* in H-NYL or H, and the figure Llano refers to (Llano Pl.10, fig. 1-3), Figs. 1 and 2 are of the dorsal and ventral side of the collection No. 5487 made by I.M. Lamb, from Argentina; while Fig. 3 is a photograph of the specimen H-NYL 31527. In the figure text (Llano 1950: 240), this specimen is described as "Fig. 3. *Agyrophora haplocarpa* (Nyl.) Llano. Bolivia, Puna Peguas, leg. Mandon. Nylander Herb. No. 31527. TYPE (H). Dorsal surface with apothecia; ventral surface showing slightly in lower left hand corner." Thus Llano here makes ANOTHER typification, this time a specimen collected by Mandon. This specimen (H-NYL 31527) is indeed present in H-NYL, and was collected by French plant collector Gilbert Mandon (1799–1866), who in the 1850s was manager of the mine Tipuani in the village of Sorata by the mountain Illampu in Bolivia and returned to France in 1861 (Weddell 1867). The handwritten label says "*Umbilicaria haplocarpa* Nyl. Bolivia, Puna Peguas. Mandon." It is NOT collected by Gay, NOT in Peru, and is clearly not the specimen cited in the protologue of *U. haplocarpa*. Because Mandon returned to France with his collections in 1861, when Nylander devoted a separate paper to their description (Nylander 1861), it seems unlikely that Mandon specimens were at all available when he wrote the protologue of *U. haplocarpa*.

The collections by Gay examined by Nylander all belong to PC, and had been deposited there several years before Nylander started his work in Paris. Thus he was not at liberty to take out one or a few thalli for his own private herbarium the way he usually did when receiving new collections for determination.

In PC there is a single collection by Gay of *U. haplocarpa*, marked with printed letters: "PÉROU. (1839-1840.) M. Cl. GAY." The sheet is marked by Nylander's hand with *Umbilicaria haplocarpa*, and the small envelope/capsule is marked similarly by Nylander. There is no mark indicating that this is a type specimen, or that it is a new species. A small, square piece of paper attached inside the envelope carries the number "645", possibly an indication of Gay's collection number. The collection consists of a single specimen, with a few leiodisc apothecia, and a lower side richly covered with rhizinomorphs. Some of the apothecia are convex as indicated in the protologue. The thallus has a hole in the middle, probably due to Nylander's extraction of some apothecia for microscopic examination. The specimen also appears to be attacked by parasitic fungi. Except for the leiodisc apothecia, the specimen is, as noted in the protologue, quite similar to the taxon *Umbilicaria hirsuta*, a species with gyrose apothecia. The specimen has slightly sorediate margins. The latter characteristic, as well as the rather few apothecia unfortunately makes it a not very typical specimen of the taxon. Although it seems likely that this is the Gay specimen Nylander examined when he described *U. haplocarpa*, it cannot be proven that this is the one specimen used by the author, or designated by the author as the nomenclatural type (cf. McNeill et al. 2006, Article 9.1). Thus it cannot definitely be identified as the holotype. But as it is the only identifiable specimen of a Gay collection, labeled by Nylander *Umbilicaria haplocarpa*, it ought to be considered the nomenclatural type, in this case a lectotype.

Lectotype (**designated here**) of *Umbilicaria haplocarpa* Nyl. The entire collection: cryptogamic Herbarium, Muséum national d'Histoire naturelle, Paris (PC) : Thallus in envelope marked *Umbilicaria haplocarpa* Nyl. in William Nylander's handwriting, glued on small sheet marked "PÉROU. (1839-1840.) M. Cl. GAY.", glued onto larger sheet marked "HERB._MUS. PARIS." in print and *Umbilicaria haplocarpa* Nyl. in William Nylander's handwriting. The sheet is now also marked with a label: "Lectotype *Umbilicaria haplocarpa* Nyl. Designated by G. Hestmark 2008."

Umbilicaria calvescens

Umbilicaria calvescens was first published as a nomen nudum by Nylander (1860: 418): "*U. calvescens* Nyl. in Mus. Par. – Peruv., Boliv.", and placed in the sub-group or section "Stirps *Umbilicariae velleae*." Taxonomic confusion started already in this first announcement by Nylander listing two varieties, both nomen nuda, collected in two different countries: var. *subvellea* Nyl. – Bolivia, and var. *hypomelaena* Nyl. – Peruvia. (Lechl. Nr. 2704). The name of the latter (Greek *hypo,* 'under' and *melas,* 'dark' or 'black') quite probably refers to a dark or black lower side of the thallus. The name 'subvelleus' might alternatively mean 'somewhat hairy' or 'hairy below.' The only identifiable

collection here is for the var. *hypomelaena,* again a collection made by Willibald Lechler, distributed by Hohenacker in the Plantae peruvianae, and originally (and erroneously) identified as *Umbilicaria vellea* by Nylander (1855: 674).

The first published description of *U. calvescens* appeared in Nylander (1861: 375), a paper examining lichen collections made by French plant collector Gilbert Mandon mentioned above:

> "*Umbilicaria calvescens* Nyl. Syn. II, p.8, t.9, f.5. – Affinis *U. velleæ*, sed minor et sporis singularibus nonnihil difformibus medioque constrictiusculis (longit. 0^{mm},015-20, crassit. 0^{mm},008-0^{mm},012). – Ad rupes in regione alpina."

No particular collection is indicated here. In Nylander's treatment of Mandon's collections, no varieties are listed, and the description is really only a statement about how this taxon is similar to *U. vellea*, but also differs in size and ascospore form. The reference to the second volume of Nylander's Synopsis Lichenum does, however, indicate that Nylander himself considered the description and illustration in his Synopsis Lichenum to be the first description of *U. calvescens*, hence the protologue of the species. He evidently thought Synopsis Lichenum II would be published before or at the same time as the paper. The first volume of Synopsis Lichenum appeared in 1860 but the publication date of the second volume has remained enigmatic (Norrlin 1913: 37–38, Ahti 1990). The fact that Nylander in 1861 was able to cite both the correct page number and the figure number on the plate, does however indicate that proofs or even ready prints were at hand. Norrlin (1913: 38) suggests that the first four sheets of the second volume of Synopsis Lichenum were indeed printed shortly after the publication of volume one, which appeared in 1860. However, because 1869 was indicated as publication date for volume two in Renvall (1891), presumably based on information from Nylander himself, Norrlin (1913) and also TL-2/6945 has accepted 1869 as the year of publication. In Synopsis Lichenum the description reads:

> "***U. calvescens*** Nyl. in Mus. Paris. Similis *velleæ*, sed thallo cinereo-fuscente subtus subnudo vel fibrillis rhizineis parcis, apotheciis gyrosis, sporis incoloribus (vel dilute fascis) ellipsoideis sæpe medio constrictiusculis (longit. 0,012-16 millim., crassit. 0,008-9 millimi.). In Boliviæ provincial Yungas lecta a cel. Weddell, in Peruvia a cl. Cl. Gay. Forte nonnisi varietas *velleæ*, sed sporis convenit cum iis (simplicibus) *Umbilicariæ haplocarpæ*; variant quoque sporæ nonnihil difformes. Gelatina hymenea iodo vinose violacee tincta, præcedente cærulescentia. Thallus latitudinis 1-3-pollicaris, varians vel subtus cinereo-pallescens vel fuscescens. Variat idem passim magis rhizinosus vel subtus hirsutus (var. *subvellea*). – Variat dein, var. *hypomelæna*, subtus nigricans rhizinis concoloribus (Lehl. Pl. Peruv. No 2704); pagina infera ei subpapillosa (comparanda *papillosa*, quæ vix a *spodochroa* differt). TABULA IX, fig. 5: *a* theca et *b* sporæ, aucta diametris 275."

Here we have references to collections made by Weddell, Gay and Lechler, as well as an institution: the Paris museum. But no mention of Mandon. The proofs of this part of the second volume of Synopsis Lichenum were thus in all

probability completed before Nylander examined Mandon's collections in 1861, and wrote what is formally the protologue. (The Plate IX of Synopsis Lichenum referred to by Nylander, had however not been printed, as it is in fact labelled "Tab. I" in the printed Synopsis Lichenum Vol.2 , and not "IX"). On this plate the Fig 5a and b depict an ascus and three separate ascospores.

This complicated publication story gives rise to two questions. First: can we identify a type specimen for *U. calvescens*? Secondly, how should the two varieties listed by Nylander be interpreted – as deviations from the type, or one of them as incorporating the type? These questions should, if possible, be solved with reference to the material in PC and/or H-NYL clearly available to Nylander when he wrote the protologue.

Type of *U. calvescens*—The protologue of *U. calvescens* is the one in Nylander (1861: 375), a paper treating collections by Mandon. Must we then choose a specimen collected by Mandon as lectotype? The description in Nylander's Synopsis Lichenum cited in the protologue shows that he had several collections in PC by other collectors than Mandon at hand when he formed his conception of *U. calvescens*, indeed that it had been formed before he received the Mandon collection, because there is no reference to Mandon material in the description of *U. calvescens* in Synopsis Lichenum II, only to specimens by Weddell, Gay (and Lechler for the var. *hypomelaena*) .

The ICBN (McNeill et al. 2006: Art. 9.2) stipulates that a lectotype should be selected from material available to the author when the description validating the name was published. In the present case this implies collections by Weddell, Gay and Mandon available to Nylander at the time of the publication of Nylander (1861). Given Nylander's specification in Synopsis Lichenum II of locality to the Paris Museum, it seems appropriate to seek a lectotype for *U. calvescens* in PC. However, Llano (1950: 178, 258, Pl. 19, figs. 2-3) stated the collection H-NYL 31531 (in H) to be the type of *U. calvescens*, claiming that "Nylander placed his sign for type on specimen No. 31532. [sic; should be 31531, GH note]" (Llano 1950: 179), and "marked by Nylander with a plus sign (+) for TYPE" (Llano 1950: 258). However, the red-ink cross markings refer to different chemical tests performed by Nylander (cf. Hue 1892, and T. Ahti personal communication), and have nothing to do with typification. Thus Llano's typification was based on an error, a chemical test interpreted as a sign for type. And again he did not consider material in PC. It can nevertheless be argued that this is a typification based on original material available to Nylander, and should for this reason be considered valid. What kind of type is another question. The concepts of holotype, lectotype etc. were not in formal use in 1950. The brown envelope containing H-NYL 31531 was in 1992 labeled by J. Wei "Lectotype of *Umbilicaria calvescens* Nyl.", but this has not been published.

The locality and collector of this collection is given on the tiny white envelope inside as "Bolivia, Yungas, Weddell." It contains three small thalli, from 20 to 25 mm in diameter. All thalli have abundant black, gyrose apothecia on their uniformly smooth, grey-brown upper surface. Two of the thalli have scattered tiny rhizinomorphs. The third thallus, has a slightly trabeculate lower side and no rhizinomorphs. The entire collection comes close to the primary characteristic given in Nylander's description: "subtus subnudo vel fibrillis rhizineis parceis" – the lower side almost naked or with sparingly rhizinomorphs – the feature that probably made him decide for the name *calvescens* ('balding') in the first place. Furthermore, the spore measurements written by Nylander on the tiny white envelope within the brown envelope corresponds exactly to those given for *U. calvescens* in Synopsis Lichenum. Thus this collection by Weddell, which Nylander selected for his own personal herbarium, is probably the one he used when describing the typical *U. calvescens*. A similar Weddell collection in PC, consisting of five thalli, does not have spore measurements written on it, and the two Gay collections in PC labeled *U. calvescens* by Nylander, are of poor quality. Llano (1950, Pl. 19, figs. 2-3) depicts the upper side of one of the thalli in H-NYL 31531, and the lower side of one of the other thalli in the collection. There are three thalli in H-NYL 31531, and together they give a good impression of the typical variety of the taxon *U. calvescens*. As McNeill et al. (2006: Art. 8.2) allows for the typification of a species on multiple small plants, it seems appropriate in this case, as done by Llano, to consider the entire collection the type collection. As the current ICBN does not provide unambiguous rules or advice to decide whether the typification made by Llano should be considered valid, a **lectotype** of *Umbilicaria calvescens* Nyl. is **here designated:** The entire collection: Herbarium Nylander (H-NYL) 31531 (in Herbarium Universitas Helsinkiensis, H). The envelope is now also marked: "Lectotype *Umbilicaria calvescens* Nyl., designated by Hestmark 2008."

Variety—*Umbilicaria calvescens* var. *hypomelaena*. For the variety *hypomelaena* Nylander explicitly indicates a collection and a collector (Lechler Plantae peruvianae No. 2704) different from Weddell and Gay mentioned in the general description in Synopsis Lichenum. This clearly indicate that this is not a typical *U. calvescens*. In PC there are two sheets with Lechler/Hohenacker No. 2704: one with two small thalli only marked *Umbilicaria vellea,* and another sheet with specimens from the same collection with a small note in the lower right corner by Nylander "*Umbilicaria calvescens* var. *hypomelæna*." In Nylander's herbarium in Helsinki there is a specimen (H-NYL 31533), with his handwriting: "Umbilicaria calvescens Nyl. var. subtus nigricans Peruvia. Lechler 2704." Inside the envelope is a cardboard with a paper slip glued on to it, with the text: "W. Lechler pl. peruvian. Ed. Th. F. Hohenacker. 2704. Umbilicaria vellea Fr. Sachapata ad saxa gran. Sept. 54." There is further a double-cross in

red indicating chemical reactions, and some notes in on ascospore sizes and a small drawing of three unicellular, ellipsoid, hyaline ascospores. On the other side of the paper slip is a single cross in red, indicating chemical tests. This specimen is depicted in Llano 1950, Pl. 20, Fig. 4-5. In the figure text to Fig. 4 here Llano (1950: 260) states that it is "*Umbilicaria calvescens* Nyl., var. *nigricans* Nyl. Peru. *W. Lechler* Pl. Peruvian. No. 2704. Nylander Herb. No. 31533, marked by Nylander with a plus sign (+) for TYPE. (H). Dorsal surface with apothecia." Because Llano stated another specimen to be the type of *U. calvescens* (see above) this seems to be intended as a type indication for the variety *nigricans*. There are several problems here. One is that Nylander did not himself recognize a var. *nigricans* – this was a preliminary name he annotated to specimens he published as the var. *hypomelaena*. As Llano (1950: 179) correctly states that the var. *hypomelaena* is based on Lechler No. 2704, and explicitly refers this variety to the specimen depicted in Pl. 20, Figs. 4-5, his figure text with var. *nigricans* may be regarded as a slip. More serious is Llano's misconception of typification by Nylander, mistaking the sign for chemical tests for a sign of type.

Because Nylander originally distinguished the var. *hypomelaena*, and this deviates significantly from typical specimens of *U. calvescens*, a typification for this variety is desirable. And as one of the PC specimens of Lechler/Hohenacker No. 2704 is the only one actually annotated var. *hypomelæna* by Nylander, but cannot be definitely identified as a holotype, this seems to be the best choice for a: **Lectotype (designated here)** of *Umbilicaria calvescens* var. *hypomelaena* Nyl.: the entire collection: cryptogamic Herbarium, Muséum national d'Histoire naturelle, Paris (PC), envelope now labeled "Lectotype of *Umbilicaria calvescens* var. *hypomelaena*. Designated by G. Hestmark 2008." Mounted on small carton marked "W. Lechler pl. peruvian. Ed. Th. F. Hohenacker. 2704. Umbilicaria vellea Fr. – Nyl. Sachapata ad saxa granitica Sept. m. 54", mounted on sheet marked "HERB. MUS. PARIS. *Umbilicaria calvescens* var. *hypomelæna* Nyl."

Variety—*Umbilicaria calvescens* var. *subvellea*. That the var. *subvellea* is also not to be considered a typical *U. calvescens* is indicated by the contrast of the two names: subvellea (hairy below) versus calvescens (balding), and the description in Synopsis Lichenum of var. *subvellea* as "subtus hirsutus" (lower side hirsute/hairy). Of the many collections of *U. calvescens* in PC annotated by Nylander, only a single sheet is annotated *subvellea*, in Nylander's handwriting: "Umbilicaria calvescens var. subvellea Nyl." The sheet has a glued on printed label with the text: "AMERIQ: MERID. Répub. de BOLIVIA. Prov. de YUNGAS. Décemb. 1846. M.H. Alg. WEDDELL. No." and then in Nylander's handwriting "*Umbilicaria vellea* Fr. similis *U. calvescens* Nyl. var. *subvellea*." The text from 'similis…' is apparently a later addition; the collection was first identified as *U. vellea*. The specimen has small gyrose apothecia and a dense cover of rhizinomorphs on the lower side. British born botanist and physician Hugh

Algernon Weddell (1819–77) travelled in Bolivia, Brazil and Peru from 1843 to 1848 and subsequently worked as aide-naturaliste at the Muséum d'Histoire naturelle in Paris 1850–57. In H-NYL there are no specimens of *U. calvescens* annotated var. *subvellea*. Llano (1950: 179) nevertheless states H-NYL 31507 to be var. *subvellea*, but this is not indicated anywhere on the collection, and H-NYL 31507 in fact seems closer to the var. *hypomelaena*. H-NYL 31507 was collected by Mandon who returned to France in 1861, and the collection was thus probably not available to Nylander when he formed his conception of the var. *subvellea* in 1860. As the var. *subvellea* exemplifies one extreme of the variation within *U. calvescens* with regard to the lower cortex cover of rhizinomorphs, and this extreme is the opposite of that of the typicum, it seems desirable to designate a type. But as Nylander has not clearly identified a type, a lectotypification seems appropriate:

Lectotype of *U. calvescens* var. *subvellea* here designated: the entire collection: cryptogamic Herbarium, Muséum national d'Histoire naturelle, Paris (PC), envelope now labeled "Lectotype of *Umbilicaria calvescens* var. *subvellea*. Designated by G. Hestmark 2008." On the sheet, below the envelope, in Nylander's handwriting: "*Umbilicaria vellea* Fr. similis *U. calvescens* Nyl. var. ***subvellea***." On sheet, lower right corner, glued on printed label marked "AMERIQ: MERID. Répub. de BOLIVIA. Prov. de YUNGAS. Décemb. 1846. M.H. Alg. WEDDELL. No."

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